

# VMware vCloud Director Adapter Installation and Configuration Guide

vCenter Operations Manager 1.0

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EN-000922-05

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# VMware vCloud Director Adapter Installation and Configuration Guide

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The *VMware vCloud Director Adapter Installation and Configuration Guide* describes how to install the vCloud Director adapter for vCenter Operations Manager.

## Intended Audience

This information is intended for anyone who needs to install and configure the vCloud Director adapter.



# Updated Information

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The *VMware vCloud Director Adapter Installation and Configuration Guide* is updated with each release of the product or when necessary.

This table provides the update history of the *VMware vCloud Director Adapter Installation and Configuration Guide*.

Revision	Description
EN-000922-05	Updated the supported vCloud Director and vCenter Server versions in <a href="#">“Installation and Configuration Requirements,”</a> on page 13.
EN-000922-04	<ul style="list-style-type: none"><li>■ Changed the product name to reflect the new licensing model for the 5.6 release.</li><li>■ Added the <code>open_source_license.txt</code> file to <a href="#">“vCloud Director Adapter Folders and Files,”</a> on page 17.</li></ul>
EN-000922-03	Updated the installation instructions in <a href="#">“Install the Adapter in a Standalone Installation,”</a> on page 15 and <a href="#">“Install the Adapter in a vApp Installation,”</a> on page 16.
EN-000922-02	Updated <a href="#">“Installation and Configuration Requirements,”</a> on page 13 to include more information about the vCenter adapter requirement.
EN-000922-01	Updated <a href="#">“Add an Adapter Instance,”</a> on page 19 to include a warning about renaming the adapter instance resource.
EN-000922-00	<ul style="list-style-type: none"><li>■ The <i>vCloud Director Adapter Technical Note</i> is now the <i>VMware vCloud Director Adapter Installation and Configuration Guide</i>.</li><li>■ Changed the description of the <b>vCloud Director Host</b> text box in <a href="#">“Add an Adapter Instance,”</a> on page 19.</li></ul>
The <i>vCloud Director Adapter Technical Note</i> was the initial release of this document.	





# Introduction to the vCloud Director Adapter

---

# 1

The vCloud Director adapter is an embedded adapter for vCenter Operations Manager. The adapter monitors the health of supported vCloud Director entities and sends early warning smart alerts for monitored Provider vDC resources.

This chapter includes the following topics:

- [“Data that the Adapter Collects,”](#) on page 9
- [“How the Adapter Processes Events,”](#) on page 9
- [“Using the vCloud Entity Status Resource Tag,”](#) on page 10
- [“vCloud Director Entities in vCenter Operations Manager,”](#) on page 10
- [“Installation and Configuration Requirements,”](#) on page 13

## Data that the Adapter Collects

The vCloud Director adapter collects information for Provider vDC, Organization, Organization vDC, and vApp entities from the vCloud Director database and creates the corresponding resources in vCenter Operations Manager. The adapter can optionally import events for these vCloud Director entities.

The vCloud Director adapter maps the vApps that it imports to virtual machine resources that the vCenter adapter has already imported and creates resource relationships between the vApps and the virtual machines.

The vCloud Director adapter does not collect performance data from vCloud Director. Instead, the vCloud Director adapter enables vCenter Operations Manager to present health data by mapping vCloud Director entities to vCenter Server objects. The vCenter adapter collects performance data for vCenter Server objects.

## How the Adapter Processes Events

The vCloud Director adapter can import events for vCloud Directory entities that have the System organization and the Provider vDC, Organization, Organization vDC, or vApp entity type. These events appear as change events in the Custom user interface.

The `PROCESS_EVENTS` property in the instance-level properties file determines whether a vCloud Director adapter instance processes events.

A vCloud Director adapter instance uses the value of the `LAST_EVENT_TIME` property in the instance-level properties file to filter out events that are already processed. During the first collection cycle, vCenter Operations Manager sets the `LAST_EVENT_TIME` property to the current time minus the value of the `MIN_BACK_INTIME_FOR_FIRST_EVENT_PROCESSING` property. The `MIN_BACK_INTIME_FOR_FIRST_EVENT_PROCESSING` property is in the adapter-level properties file and its default value is 60 minutes.

A vCloud Director adapter instance uses a white list file, called `events_white_list.txt`, to apply additional filtering to events that it retrieves from vCloud Director. The adapter instance filters events based on the white list before it imports the events into vCenter Operations Manager. You can modify the events in the white list file.

**NOTE** Because the vCloud Director adapter logs in to vCloud Director as an administrator of the System organization, it has access to only the subset of events that are available to that user. The events for vApps are not available.

## Using the vCloud Entity Status Resource Tag

The vCloud Director adapter associates each vCloud Directory entity that it maps to a resource with a vCloud Entity Status resource tag.

The vCloud Entity Status resource tag values are `NotExisting`, `Deployed-vApps`, and `NotDeployed-vApps`. Each resource tag value includes the name of a vCloud Director instance, for example, `NotExisting:mycloud`.

You can select the `Deployed-vApps` and `NotDeployed-vApps` tag values to filter resources based on their deployment status.

You can select the `NotExisting` tag value to locate resources that no longer exist in the vCloud Director inventory and remove them from the Custom user interface. When objects are removed from the vCloud Director inventory, they remain in the Custom user interface until you remove them.

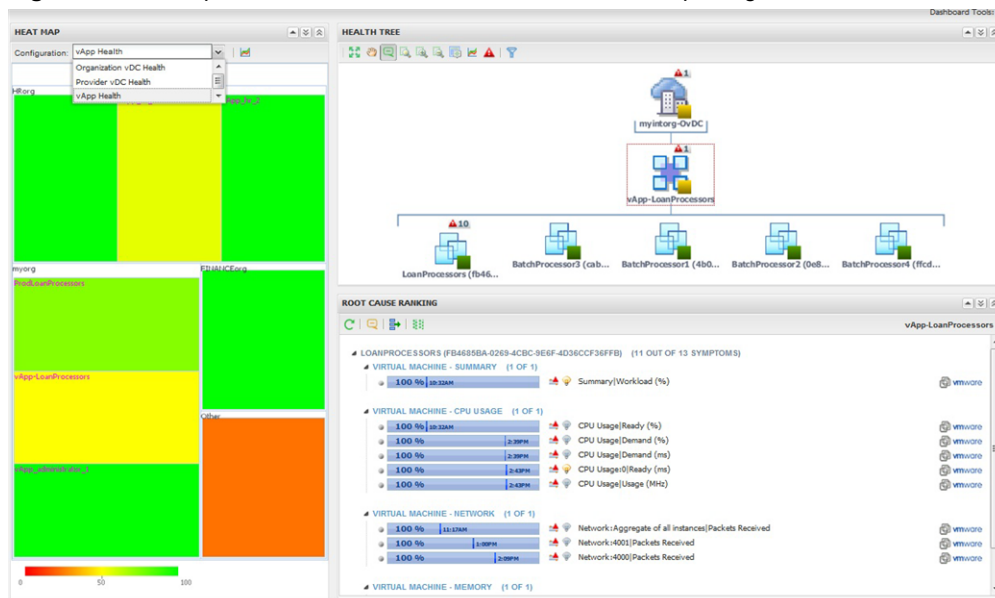
## vCloud Director Entities in vCenter Operations Manager

With the vCloud Director adapter, you can monitor vCloud Director entities in the Custom user interface. The vCloud Director entities that the adapter imports, and how those entities appear in the user interface, depend on your particular environment.

### Heat Map Widget

This example shows vCloud Director entities in the Heat Map widget. The topology of the virtual machines appears in the Health Tree pane. A dotted line highlights the virtual machine that you select. A list of symptoms appears for the selected virtual machine in the Root Cause Ranking pane.

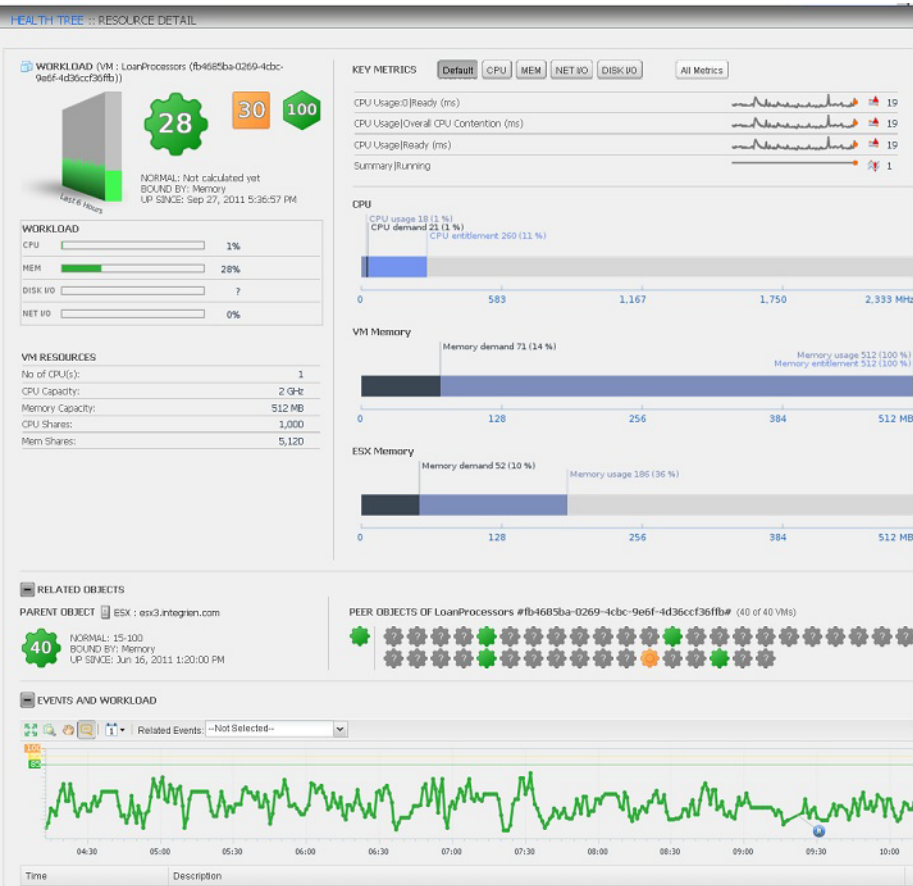
**Figure 1-1.** Example of vCloud Director Entities in the Heat Map Widget



## Resource Detail Page for a Virtual Machine

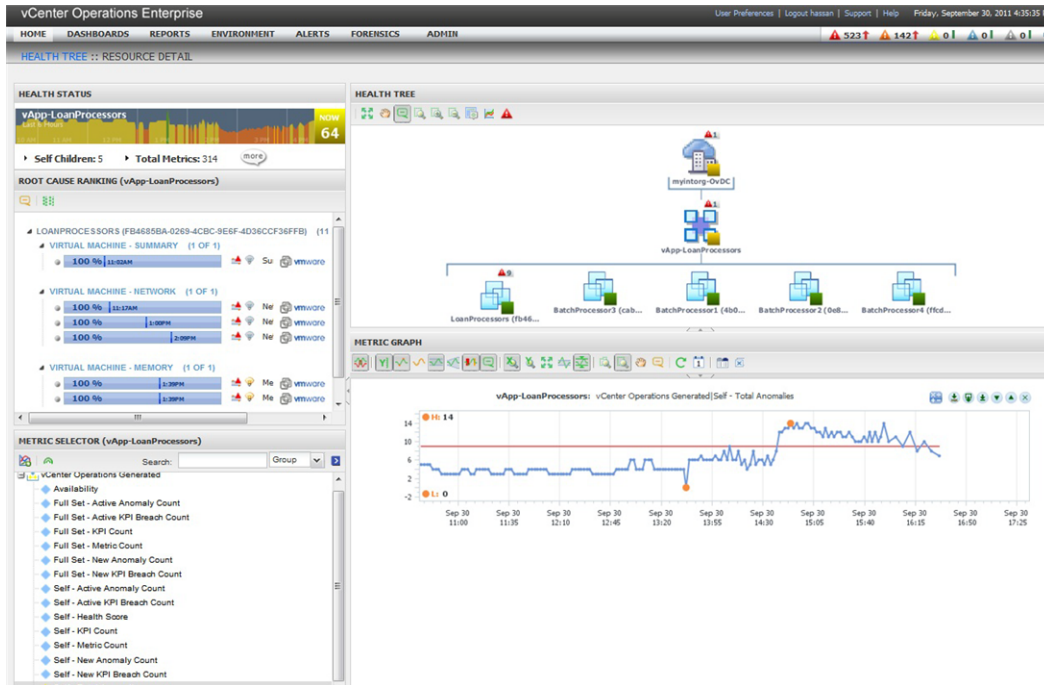
This example shows the type of information that appears on the Resource Detail page for a virtual machine.

**Figure 1-2.** Example of Virtual Machine Details



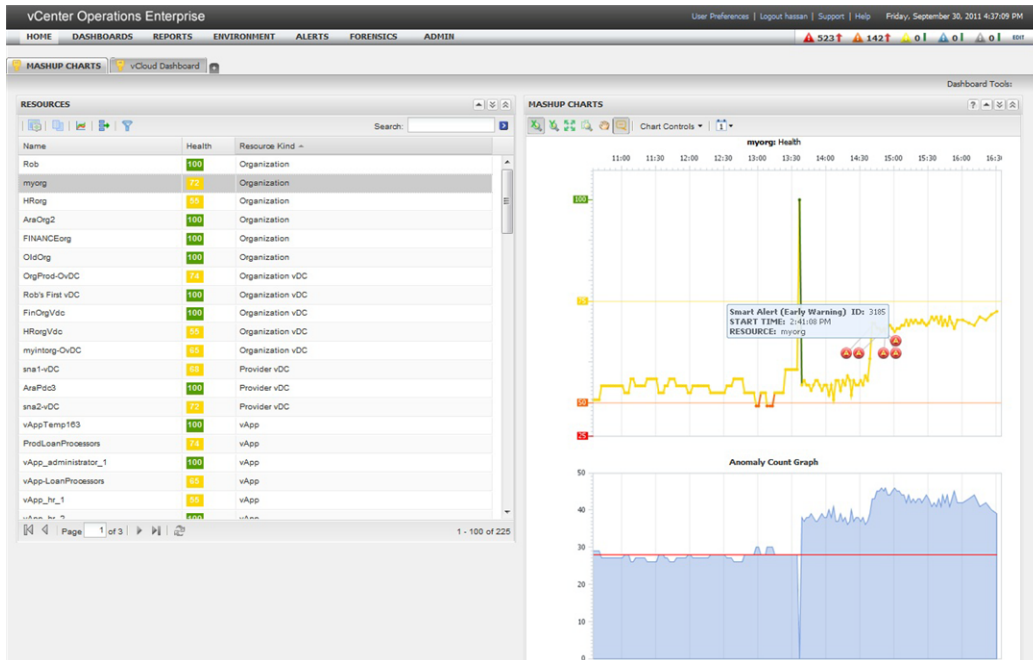
## Resource Detail Page for a vApp

This example shows the type of information that appears on the Resource Detail page for a vApp. The Health Tree pane shows the topology of the virtual machines and the Root Cause Ranking pane shows a summary of the virtual machine that indicates a problem.

**Figure 1-3.** Example of vApp Details

## Resources and Mashup Charts Widgets

This example shows vCloud Director entities in the Resources and Mashup Charts widgets. Health scores for each entity appear in the Resources widget and the Mashup Charts widget shows historical health trends.

**Figure 1-4.** Examples of vCloud Director Entities in the Resources and Mashup Charts Widgets

## Installation and Configuration Requirements

The vCloud Director adapter has certain installation and configuration requirements.

### Compatible vCloud Director Versions

The vCloud Director adapter is compatible with vCloud Director 5.1 and 5.5.

### Compatible vCenter Server Versions

The vCloud Director adapter is compatible with the following versions of vCenter Server:

- 5.7.1
- 5.8
- 5.8.x

### vCenter Adapter Requirements

You must install and configure the vCenter adapter before you install and configure the vCloud Director adapter.

The vCloud Director adapter uses the virtual machine resources that the vCenter adapter creates when it creates relationships between virtual machines and the vApps that it imports from vCloud Director.

For information about installing and configuring the vCenter adapter, see the *VMware vCenter Adapter Installation and Configuration Guide*.

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**NOTE** If you have a vCenter Operations Manager vApp installation, the vCenter adapter is installed by default.

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### Credential Requirements

You must provide the user name and password of a vCloud Director user when you create a credential for a vCloud Director adapter instance. The user must have an Administrator role.

### Additional Software Requirements

The vCloud Director adapter uses VCD Java SDK (vsdjavasdk) 1.5.0 to communicate with vCloud Director. The JAR files for the SDK are provided in the `lib` folder under the adapter installation folder.



# Installing the vCloud Director Adapter

# 2

How you install the vCloud Director adapter depends on whether you have a vCenter Operations Manager Standalone or vApp installation.

This chapter includes the following topics:

- [“Install the Adapter in a Standalone Installation,”](#) on page 15
- [“Install the Adapter in a vApp Installation,”](#) on page 16
- [“vCloud Director Adapter Folders and Files,”](#) on page 17

## Install the Adapter in a Standalone Installation

If you have a Standalone installation, you install the vCloud Director adapter by extracting the adapter installation files from a TGZ file and running an installation utility.

### Prerequisites

- Download the adapter installation TGZ file anonymously from <ftp://ftp.integrien.com/>.
- Make a note of the build number in the TGZ file name. The build number appears after the adapter name, for example, *adaptername-buildnumber.tgz*.
- Read the release notes that are included with the TGZ file.

### Procedure

- 1 Open the TGZ file and extract the TAR file to a temporary folder on your vCenter Operations Manager server.
- 2 In the temporary folder, open the TAR file and extract and run the installer for your operating system platform.
- 3 Log in to the Custom user interface as an administrator.
- 4 Select **Admin > Support**.
- 5 On the **Info** tab, find the Adapters Info pane and click the **Describe** icon (🔍).

The **Describe** icon is located at the top right of the Adapters Info pane.

- 6 Click **Yes** to start the describe process and click **OK**.

The Custom user interface finds the adapter files, gathers information about the abilities of the adapter, and updates the user interface with information about the adapter. If you have remote collectors, it installs the adapter on the remote collectors.

The describe process might take several minutes. When the describe process is finished, the adapter appears in the Adapters Info pane. The build number is in the Adapter Version column.

- 7 Verify that the build number in the Adapter Version column for the adapter matches the build number in the TGZ file that you downloaded.

The installation utility creates the `vcloud_adapter3` folder and `vcloud_adapter3.jar` file in the `vcenter-ops/user/plugins/inbound` folder.

## Install the Adapter in a vApp Installation

If you have a vApp installation, you install the vCloud Director adapter from a PAK file.

### Prerequisites

- Download the adapter installation PAK file anonymously from <ftp://ftp.integrien.com>.
- Make a note of the build number in the PAK file name. The build number appears after the adapter name, for example, `adaptername-buildnumber.pak`.
- Read the release notes that are included with the PAK file.

### Procedure

- 1 Save the PAK file in a temporary folder.
- 2 Log in to the Admin user interface as the admin user.  
For example: `https://ipaddress/admin/`
- 3 On the **Update** tab, click **Browse** to locate the temporary folder and select the PAK file.
- 4 Click **Update** and click **OK** to confirm the update.  
The Admin user interface uploads the PAK file. The upload might take several minutes.
- 5 Read and accept the EULA and click **OK**.
- 6 Click **OK** to confirm and start the update process.  
The update might take several minutes. Status information appears on the **Update** tab when the update is finished.
- 7 Log in to the Custom user interface as an administrator.  
For example: `https://ipaddress/vcops-custom/`
- 8 Select **Admin > Support**.
- 9 On the **Info** tab, find the Adapters Info pane and click the **Describe** icon (📄).  
The **Describe** icon is located at the top right of the Adapters Info pane.
- 10 Click **Yes** to start the describe process and click **OK**.  
The Custom user interface finds the adapter files, gathers information about the abilities of the adapter, and updates the user interface with information about the adapter.  
The describe process might take several minutes. When the describe process is finished, the adapter appears in the Adapters Info pane. The build number is in the Adapter Version column.
- 11 Verify that the build number in the Adapter Version column for the adapter matches the build number in the PAK file that you uploaded.

The installation process creates the `vcloud_adapter3` folder and `vcloud_adapter3.jar` file in the `vcenter-ops/user/plugins/inbound` folder.



## vCloud Director Adapter Folders and Files

The installer places the vCloud Director adapter files in the `vccloud_adapter3` folder.

**Table 2-1.** vCloud Director Adapter Folders and Files

Folder	File	Description
conf	<code>describe.xml</code>	Describes the resources of the adapter.
	<code>events_white_list.txt</code>	Filters the events that the adapter retrieves from vCloud Director.
	<code>vccloud.properties</code>	Contains properties that apply to all adapter instances.
	<code>version.txt</code>	Contains version information.
	<code>history.txt</code>	Contains the history of the adapter changes.
	<code>open_source_license.txt</code>	Open source license file.
work	<code>vccloud_instanceID.properties</code>	Contains properties that apply to a specific adapter instance.
	<code>VEntitiesLog_instanceID.txt</code> <code>VEntitiesLog_instanceID.txt.bck</code>	Logs relationships for a specific adapter instance.
	<code>allParents_instanceID.txt</code> <code>allParents_instanceID.txt.bck</code>	Keeps track of all parent resources for a specific adapter instance.
lib		Contains all library files.



# Configuring the vCloud Director Adapter

# 3

To configure the vCloud Director adapter, you must add an adapter instance and credential in vCenter Operations Manager. You can optionally modify adapter-level and instance-level properties.

This chapter includes the following topics:

- [“Add an Adapter Instance,”](#) on page 19
- [“Filtering the Events that the Adapter Imports,”](#) on page 21
- [“Configuring Adapter Properties,”](#) on page 21

## Add an Adapter Instance

You must create an adapter instance for the vCloud Director adapter. The adapter instance defines the adapter type and identifies the vCloud Director host system.

You can optionally list the Provider vDCs or Organizations for which the adapter instance collects data.

---

**IMPORTANT** After you create a vCloud Director adapter instance, do not change the name of the adapter instance resource. Because vCenter Operations Manager uses the adapter instance resource name as a resource identifier value, renaming the adapter instance resource causes vCenter Operations Manager to create duplicate vCloud Director resources in the user interface.

---

### Prerequisites

- Install the vCloud Director adapter. See [Chapter 2, “Installing the vCloud Director Adapter,”](#) on page 15.
- Verify that your system meets the configuration requirements. See [“Installation and Configuration Requirements,”](#) on page 13.
- Create a credential, or, if you plan to create a credential when you define the adapter instance, become familiar with creating credentials. See [“Add a Credential,”](#) on page 20.

### Procedure

- 1 Log in to the Custom user interface as an administrator.
- 2 Select **Environment > Configuration > Adapter Instances**.
- 3 Select the collector to use from the **Collector** drop-down menu.

Unless you added additional collectors, the only available collector is **vCenter Operations Server**. You can change the name of this collector when you install the standalone version.

- 4 Select **vCloud Adapter** from the **Adapter Kind** drop-down menu.
- 5 Click the **Add New Adapter Instance** icon.

- 6 Type a name for the adapter in the **Adapter Instance Name** text box.
- 7 Type the host name or IP address of the vCloud Director host system in the **vCloud Director Host** text box.  
  
If a public REST API base URL is assigned in vCloud Director, type the public address. For example, if the VCD public REST API base URL is `https://vcloud.somehost.com`, type **vcloud.somehost.com**.
- 8 Select an **Auto Discovery** option.  
  
If you select **true**, the adapter instance discovers and imports vCloud Director entities. If you select **false**, you must use manual discovery to import vCloud Director entities.
- 9 (Optional) To limit the vCloud Director entities that the adapter instance imports, list the names of the Provider vDCs to import in the **Filter By Provider vDCs List** text box and the names of the Organizations to import in the **Filter By Organizations List** text box.  
  
Use a semicolon (;) to separate multiple names, for example, **org1; org2; org3**.
  - If you leave both lists blank, the adapter instance imports all of the supported entities from the vCloud Director hierarchy.
  - If you list Organizations and leave the Provider vDC list blank, the adapter instance imports only the Organizations that you list and the entities that are related to those Organizations.
  - If you list Provider vDCs and leave the Organizations list blank, the adapter instance imports only the Provider vDCs that you list and the entities that are related to those vDCs.
  - If you list Provider vDCs and Organizations, the adapter instance imports the union of the two sets.
- 10 Select the credential to use to sign on to the data source from the **Credential** drop-down menu, or click **Add** to add a new credential.
- 11 Click **Test** to test the connection to the vCloud Director host system.
- 12 Click **OK** to save your configuration.

### What to do next

If you disabled autodiscovery for the adapter instance, use manual discovery to import vCloud Director entities. For information about using the manual discovery process, see the online help.

## Add a Credential

The vCloud Director adapter requires a user name and password to connect to vCloud Director. You use this user name and password to create a credential for the adapter instance in vCenter Operations Manager.

You can add the credential before you create the adapter instance and select the correct credential when you define the adapter instance, or you can add the credential when you define the adapter instance.

### Prerequisites

- Install the vCloud Director adapter. See [Chapter 2, “Installing the vCloud Director Adapter,”](#) on page 15.
- Verify that the user name and password meet the credential requirements. See [“Credential Requirements,”](#) on page 13.

### Procedure

- 1 Log in to the Custom user interface as an administrator.
- 2 Select **Environment > Configuration > Credentials**.
- 3 Select **vCloud Adapter** from the **Adapter Kind** drop-down menu.

- 4 Select **vCloud Adapter Credentials** from the **Credential Kind** drop-down menu.
- 5 At the top of the list of credentials, next to **Action**, click **Add**.
- 6 Type a unique name for the credential instance in the **Instance name** text box.
- 7 Type the user name and password in the **User Name** and **Password** text boxes. You must provide credentials for a user with an Administrator Role.  
  
You can type the user name in the format **username** or **username@System**.
- 8 Click **OK** to add the credential for the adapter kind.

The credential appears in the list in the Manage Credentials window.

## Filtering the Events that the Adapter Imports

The vCloud Director uses a white list file, called `events_white_list.txt`, to filter events that it retrieves from vCloud Director. The `events_white_list.txt` file is in the `conf` folder. In a vApp installation, you modify the `events_white_list.txt` file on the Analytics virtual machine.

By default, `events_white_list.txt` contains the following events:

```
VDC_CREATE_REQUEST
VDC_CREATE
VDC_DELETE_REQUEST
VDC_DELETE
VDC_FAST_PROVISIONING_MODIFY
VDC_THIN_PROVISIONING_MODIFY
VDC_MODIFY
PROVIDERVDC_CREATE_REQUEST
PROVIDERVDC_CREATE
PROVIDERVDC_MODIFY
PROVIDERVDC_DELETE_REQUEST
PROVIDERVDC_DELETE
ORG_CREATE
ORG_MODIFY
ORG_DELETE
```

You can add or remove events from the `events_white_list.txt` file. If you do not list events to import and leave the file empty, the vCloud Director adapter imports all events.

## Configuring Adapter Properties

You configure adapter-level properties in the `vcloud.properties` file and instance-level properties in the `vcloud_instanceID.properties` file. The adapter-level configuration file contains properties that affect all adapter instances. The instance-specific configuration files contain properties that affect only particular adapter instances. Properties files are in the `conf` folder.

---

**NOTE** In a vApp installation, you modify the properties file in the `conf` folder on the Analytics virtual machine.

---

## Adapter-Level Properties

You define adapter-level properties in the `vcloud.properties` file in the `conf` folder. Adapter-level properties affect all instances of the vCloud Director adapter.

**Table 3-1.** Adapter-Level Properties

Property	Description
PROCESS_EVENTS	Determines whether the adapter processes events. Setting this property to true causes the adapter to process events.
MIN_BACK_INTIME_FOR_FIRST_EVENT_PROCESSING	Determines the number of minutes between event processing. For example, if this property is set to 60 (the default value) and the adapter starts at 11 a.m., the adapter imports only events that are generated after 10 a.m. on the same day. Setting this property ensures that the adapter does not retrieve events that belong to vCloud Director entities that might no longer exist.
USE_CERTIFICATES	Determines whether the adapter uses the certificates in the collector truststore in the <code>vcenter-ops/user/conf</code> folder. If you set this property to true, the adapter uses the certificates in the truststore each time it logs in to vCloud Director. If the certificates are not valid or are missing, the adapter fails to connect to vCloud Director. If you set this property to false, the adapter always logs in to vCloud Director without using certificates.

## Instance-Level Properties

Each adapter instance has a properties file in the work folder called `vcloud_instanceID.properties`, where *instanceID* is the resource ID of the adapter instance. Instance-level properties affect only a particular vCloud Director adapter instance.

The vCloud Director adapter creates and initializes the instance-level properties file during the first collection cycle of the adapter instance.

The `LAST_EVENT_TIME` property in the instance-level properties file tracks the last event time that the adapter instance retrieves from vCloud Director. During the first collection cycle, the `LAST_EVENT_TIME` property is set to the current time minus the value of the `MIN_BACK_INTIME_FOR_FIRST_EVENT_PROCESSING` property. The `MIN_BACK_INTIME_FOR_FIRST_EVENT_PROCESSING` property is in the `vcloud.properties` file and its default value is 60 minutes.

You should not need to modify the `LAST_EVENT_TIME` property except during adapter testing.

# Troubleshooting the vCloud Director Adapter

# 4

Known troubleshooting information can help you diagnose and resolve problems with the vCloud Director adapter.

This chapter includes the following topics:

- [“Troubleshooting a vCloud Director Adapter Instance,”](#) on page 23
- [“Viewing System Log Files,”](#) on page 23

## Troubleshooting a vCloud Director Adapter Instance

Perform these general troubleshooting steps to diagnose and correct problems with a vCloud Director adapter instance.

- 1 Test the connection to the vCloud Director host system. See [“Add an Adapter Instance,”](#) on page 19.
- 2 If the adapter instance cannot connect to the vCloud Director host system, verify the address in the **vCloud Director Host** text box on the Add Adapter Instance window. If a public REST API base URL is assigned in vCloud Director, you must type the public address. See [“Add an Adapter Instance,”](#) on page 19.
- 3 View the collection status and state of the adapter instance resource on the Environment Overview page.
- 4 Check the adapter and collector logs for errors. See [“Viewing System Log Files,”](#) on page 23.

## Viewing System Log Files

You can view vCloud Director errors in the vCenter Operations Manager adapter and collector log files. You can view log files in the Custom user interface or in an external log viewer.

The vCloud Director adapter log files are in the *vcenter-ops/user/log/adapters/VCloudAdapter* folder. The collector log files are in the *vcenter-ops/user/log* folder.

You can set the log level for each class in the *log4j.properties* file in the *vcenter-ops/user/log/conf/collector* folder, for example:

```
log4j.logger.com.integrien.adapter3.vlcloud.VCloudAdapter=debug
```

The logging level is set to ERROR by default. To troubleshoot issues, set the logging level to INFO. To view detailed messages, including micro steps, queries, and returned results, set the logging level to DEBUG.

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**NOTE** If you set the logging level to DEBUG, log files can become large very quickly. Set the logging level to DEBUG only for short periods of time.

---

For information about viewing log files and modifying logging levels, see the online help.

## vCloud Director Adapter Classes

The vCloud Director adapter uses certain adapter classes. These classes are in the `vcld_adapter3.jar` file.

- `com.integrien.adapter3.vcloud.VCloudAdapter`
- `com.integrien.adapter3.vcloud.VCloudConstants`
- `com.integrien.adapter3.vcloud.RelationshipProcessor`
- `com.integrien.adapter3.vcloud.FakeSSLSocketFactory`
- `com.integrien.adapter3.vcloud.EventProcessor`
- `com.integrien.adapter3.vcloud.vmentity.VCloudEntity`
- `com.integrien.adapter3.vcloud.vmentity.VCloudEvent`
- `com.integrien.adapter3.vcloud.properties.VCopsDBProperties`
- `com.integrien.adapter3.vcloud.properties.InstanceProperties`
- `com.integrien.adapter3.vcloud.properties.VCloudProperties`
- `com.integrien.adapter3.vcloud.exceptions.VCloudAdapterException`



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